

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-27 (Canceled).

Claim 28 (Previously Presented): A method for detection of an analyte a in a fluid sample, comprising the following steps:

1) saturating a solid support comprising, on at least part of its surface, at least one trifunctional reagent (tripod Y) comprising the following three functional poles:

i) a luminescent group (L),

ii) a molecule (B) selected from the group consisting of the analyte a, an analog of the analyte a or a fragment of the analyte a; and

iii) a function that provides attachment of the trifunctional reagent to the surface of the solid support,

with a receptor for the analyte a, the receptor being labeled with a compound (Q) (receptor-Q) that quenches the luminescence of the group L, so as to form a complex C between the molecule (B) and the receptor-Q;

2) bringing the solid support obtained in step 1) into contact with a fluid sample that may comprise the analyte a to be detected;

3) measuring the intensity of the signal emitted by the group L, which is proportional to the amount of analyte a present in the fluid sample; and

4) regenerating the solid support by bringing the solid support into contact with the receptor-Q.

Claim 29 (Previously Presented): The method as claimed in claim 28, wherein several types of tripods Y that differ from one another through the nature of the molecule (B) that they comprise are attached to distinct and known zones of the solid support.

Claim 30 (Previously Presented): The method as claimed in claim 28, wherein step 3) and step 4) are carried out continuously.

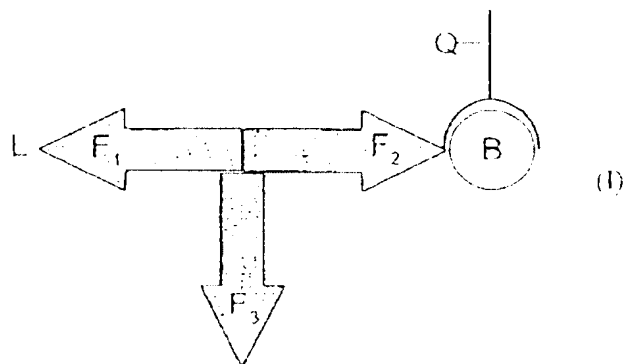
Claim 31 (Previously Presented): The method as claimed in claim 28, wherein the solid support is selected from the group consisting of glasses, plastics, ceramics, metals and metalloids.

Claim 32 (Previously Presented): The method as claimed in claim 28, wherein the solid support is in the form of a tube, a capillary, a plate or a bead.

Claim 33 (Previously Presented): The method as claimed in claim 28, wherein the fluid sample consists of water, a liquid biological medium, or a liquid medium comprising dissolved gaseous molecules or molecules originating from solid samples.

Claim 34 (Previously Presented): The method as claimed in claim 28, wherein the intensity of the signal emitted during step 3) is determined by a luminescence detector.

Claim 35 (Previously Presented): The method as claimed in claim 28, wherein the complex C formed at the end of the saturation in 1) is selected from the group consisting of complexes of formula (I) below:



wherein:

- the arrows represent the structure of the backbone of the tripod Y, which is a linker arm consisting of a peptide, nucleotide or glucoside chain or of a saturated or unsaturated, linear or branched hydrocarbon-based chain; the chains being optionally substituted, interrupted and/or ended with one or more hetero atoms, such as N, O or S, and/or with one or more amino acids, and comprising three reactive chemical functions  $F_1$ ,  $F_2$  and  $F_3$ ;

- L represents a luminescent group covalently bonded to the tripod Y by the reactive chemical function  $F_1$ ;

- B represents an analyte a, a structural analog of an analyte a or a fragment of an analyte a to which is noncovalently and reversibly attached a receptor specific for the analyte a, the receptor being labeled with a compound Q; the molecule (B) being covalently bonded to the tripod Y by the reactive chemical function  $F_2$ ;

- Q represents a compound that quenches the luminescence of the group L; and

- $F_3$  represents a reactive chemical function that can allow the attachment of the tripod Y to the surface of the solid support.

Claim 36 (Previously Presented): The method as claimed in claim 35, wherein the functions  $F_1$ ,  $F_2$  and  $F_3$ , independently of one another, provide:

i) either a direct linkage via a corresponding chemical function present on the luminescent compound, the molecule (B) or the solid phase;

ii) or an indirect linkage, and in this case, the linkage is carried out by coupling, to at least one of the functions  $F_1$ ,  $F_2$  and/or  $F_3$ , a molecule  $M_1$  forming a complex with a molecule  $M_2$  attached beforehand to at least part of the surface of the solid phase, to the molecule (B) and/or to the luminescent group.

Claim 37 (Previously Presented): The method as claimed in claim 35, wherein the functions  $F_1$ ,  $F_2$  and  $F_3$ , which may be identical or different, are selected from the group consisting of: thiols; amines; alcohols; acid functions; esters; isothiocyanates; isocyanates; acylazides; sulfonyl chlorides; aldehydes; glyoxals; epoxides; oxiranes; carbonates; imidoesters; carbodiimides; maleimides; nitriles; aziridines; acryloyl; halogenated derivatives; disulfide groups; phosphorus-containing groups; diazo; carbonyldiimidazole; hydrazides; arylazides; hydrazines; diazirines; magnesium compounds; lithium compounds; cuprates; zinc compounds and unsaturated systems.

Claim 38 (Previously Presented): The method as claimed in claim 37, wherein the functions  $F_1$ ,  $F_2$  and  $F_3$  are selected from the group consisting of amine functions of formulae  $R-NH_2$ ,  $R-NH-$ ,  $(R)_3-N$ ,  $R-NH-OR$  and  $NH_2-OR$ ; alcohol functions  $R-OH$ ; and halogenated groups of formula  $R-X$  with  $X$  representing a halogen atom; it being understood that, in the formulae,  $R$  represents an alkyl, aryl, vinyl or allyl radical.

Claim 39 (Previously Presented): The method as claimed in claim 28, wherein the luminescent group is selected from the group consisting of fluorescein and its derivatives; rhodamine and its derivatives; diaminidophenyl indo; acridine; fluorescent dyes with reactive amines; eosin; and erythrosine.

Claim 40 (Previously Presented): The method as claimed in claim 28, wherein the receptor is selected from the group consisting of antibodies in whole, fragmented or recombinant form, biological receptors, nucleic acids, peptide nucleic acids, lectins, transporter proteins, chelates and synthetic receptors.

Claim 41 (Previously Presented): The method as claimed in claim 28, wherein the receptor exhibits greater affinity for the analyte a than for the molecule (B).

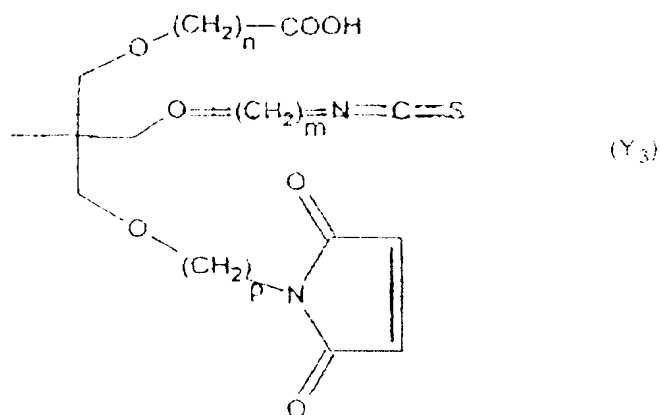
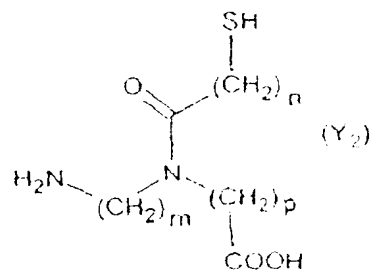
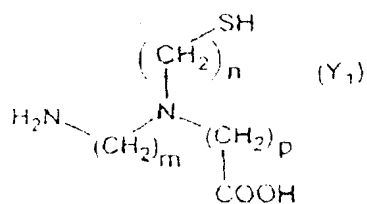
Claim 42 (Previously Presented): The method as claimed in claim 28, wherein the quenching compound (Q) is selected from the group consisting of rhodamine and its derivatives, the fluorescent compounds mentioned in claim 12, and nonfluorescent molecules.

Claim 43 (Previously Presented): The method as claimed claim 35, wherein the complexes of formula (I) are selected wherein:

i) (B) is selected from the group consisting of peptides, proteins, oligonucleotides, sugars and peptide nucleic acids,

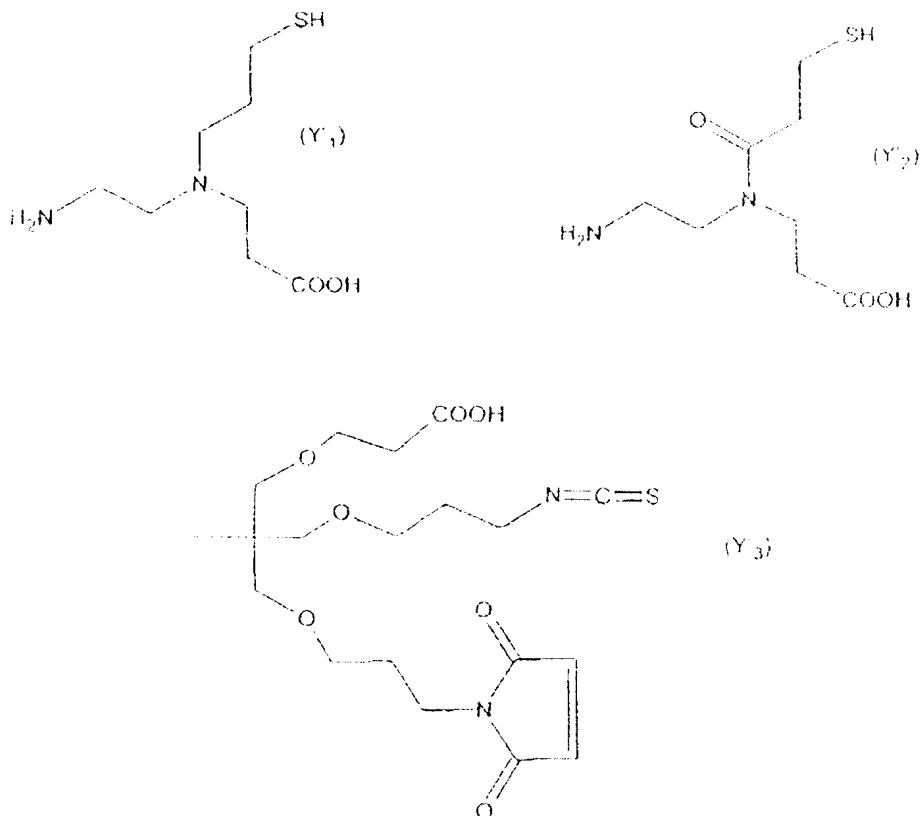
ii) L is fluorescein, and

iii) the backbone of the tripod Y is selected from the group consisting of the structures Y<sub>1</sub> to Y<sub>3</sub> below:



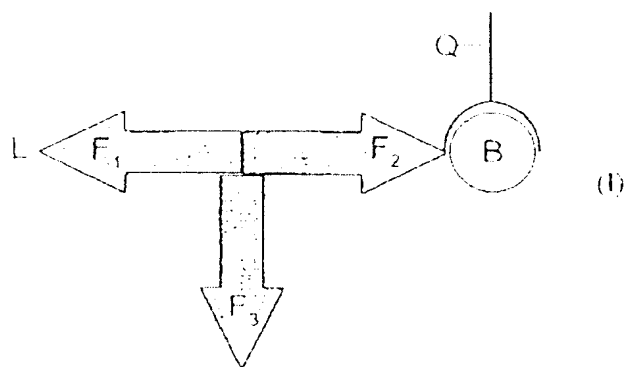
wherein n, m and p, which may be identical or different, are integers between 1 and 20 inclusive.

Claim 44 (Previously Presented): The method as claimed in claim 43, wherein structures Y<sub>1</sub> to Y<sub>3</sub> are selected from the group consisting of compounds of formulae (Y'<sub>1</sub>) to (Y'<sub>3</sub>) below:



Claim 45 (Previously Presented): A complex C, wherein it corresponds to formula (I)

below:



wherein L, B, Q, the arrows and F<sub>1</sub>, F<sub>2</sub> and F<sub>3</sub> are as defined in claim 35.

Claim 46 (Previously Presented): A method for continuous heterogeneous-phase detection of an analyte a in a fluid sample, comprising detecting the analyte a in a fluid sample with at least one complex C of formula (I).

Claim 47 (Currently Amended): A device for continuous heterogeneous-phase detection of at least one analyte a in a fluid sample, wherein a fluid sample to be analyzed is integrated into a medium forming a stream that flows over at least one solid support at the surface of which is attached at least one tripod Y as defined in claim ~~[[1]]~~ 28 and specific for the analyte a to be detected, a luminescence detector placed opposite the solid support is coupled to a valve control that is controlled by a threshold of intensity of signal emitted by the detector and which triggers, for a given period of time, the opening of a reservoir comprising a receptor-Q capable of forming a complex with the tripod Y, this reservoir being linked to the support via a feedback loop which comes in upstream of the solid support to which the tripod Y is attached, in order to saturate and/or regenerate the latter with receptor-Q by passage in the stream and complexation on the tripod Y.

Claim 48 (Previously Presented): The device as claimed in claim 47, wherein luminescence intensity values are monitored and secondarily translated into an amount of analyte a by a calculation system coupled to the luminescence detector.

Claim 49 (Previously Presented): The device as claimed in claim 47, wherein an event marker is placed in the feedback loop in order to signal a variation in intensity of the signal above a predetermined value.

Claim 50 (Previously Presented): The device as claimed in claim 47, wherein the solid support is a capillary coupled to the environment containing the sample to be analyzed, the



coupling being carried out either by a round-bottomed capture flask wherein the sample sparges in a medium corresponding to that of the flow stream, or by a flexible pipe.

Claim 51 (Previously Presented): The device as claimed in claim 47, wherein the stream is entrained by the low pressure produced by a pump, a piston, or equivalent.

Claim 52 (Previously Presented): The device as claimed in claim 47, wherein the device is equipped with a round-bottomed capture flask and with a sparging system for collecting samples in gaseous form and for solubilizing the constituents to be detected that they contain.

Claim 53 (Previously Presented): A method for detecting the presence of an analyte a in a natural or industrial medium, comprising detecting the presence of an analyte a in a natural or industrial medium with the device defined in claim 47.

Claim 54 (Previously Presented): The method as claimed in claim 53, wherein the detecting is performed in lakes, rivers, swimming pools, factories, purification plants, or ventilation or air-conditioning systems.